SINGLE-FREQUENCY NARROW LINEWIDTH 1μM FIBER LASER

ABSTRACT OF THE INVENTION

A compact single frequency, single-mode 1μm fiber laser with narrow linewidth (<10 kHz) and high output power (>2mW) is formed with an oxide-based multi-component glass fiber doped with triply ionized rare-earth ytterbium ions and fiber gratings formed in sections of passive silica fiber and fused thereto. The multi-component glass supports higher doping concentrations than standard silica fiber, hence higher output power levels in short cavities. Formation of the gratings in passive silica fiber both facilitates splicing to other optical components and reduces noise thus improving linewidth.